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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/880,217	06/12/2001	Wenting Tang	HP- 10013807	5315

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EXAMINER

ENGLAND, DAVID E

ART UNIT	PAPER NUMBER
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2143

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/880,217

Applicant(s)

TANG ET AL.

Examiner

David E. England

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-10, 12-15, 18-20, 22-27 and 30-33 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 11, 16, 17, 21, 28, 29 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) *
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1 – 34 are presented for examination.

Information Disclosure Statement

1. The information disclosure statement filed 08/10/2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Objections

2. Claim 30 is objected to because of the following informalities: There are two paragraphs with an index of "f". Appropriate correction is required.
3. Claims 4, 5, 11, 16, 17, 21, 28, 29 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "optimized" in claim 8 is a relative term which renders the claim indefinite. The term "optimized" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Applicant is asked to cancel or amend this claim in a way that would enable one of ordinary skill in the art to understand the scope of "optimized".

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 9, 13, 20, 22 – 25, 32 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Anerousis et al. U.S. Patent No. 6760775 (hereinafter Anerousis).

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9. Referencing claim 13, as closely interpreted by the Examiner, Anerousis teaches a communication network, a method of TCP state migration comprising the steps of:

10. a) establishing a TCP/IP communication session between a client computer and a first bottom TCP (BTCP) module located below a first TCP module in a first operating system at a front-end node, said front end node part of a plurality of web server nodes that form a web server cluster containing information, said TCP/IP communication session established for the transfer of data contained within said information, (e.g. col. 7, lines 21 – 33 & 49 – 67, “*tunneling, SLR, cluster*”);
11. b) receiving a HTTP request associated with said TCP/IP communication session at said first BTCP module, (e.g. col. 7, lines 21 – 33 & 49 – 67, “*tunneling, SLR, cluster*”);
12. c) examining content of said HTTP request, (e.g. col. 7, lines 21 – 33 & 49 – 67);
13. d) determining which of said plurality of web server nodes, a selected back-end node, can best process said HTTP request based on said content, (e.g. col. 7, lines 21 – 33 & 49 – 67);
14. e) handing off said TCP/IP communication session from said first BTCP module to a selected back-end node over a persistent control channel, (e.g. col. 8, lines 7 – 30);
15. f) migrating a first TCP state of said first BTCP module to said selected back-end node, and sending a second TCP state of said selected back-end node to said first BTCP module over said control channel, (e.g. col. 8, lines 17 – 45);
16. g) forwarding incoming data packets received at said first BTCP module to said selected back-end node, (e.g. col. 8, lines 17 – 45); and
17. h) sending outgoing response packets from said selected back-end node directly to said client, (e.g. col. 7, line 49 – col. 8, line 16); and

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18. i) terminating said TCP/IP communication session at said front-end node and said selected back-end node when said TCP/IP communication session is closed, (e.g. col. 8, line 46 – col. 9, line 39).

19. Referencing claim 22, as closely interpreted by the Examiner, Anerousis teaches each node said web cluster can perform as said front-end node and as said selected back-end node, and said control channel allows for communication between all nodes for TCP state migration, (e.g. col. 14, lines 20 – 40 & col. 14, line 61 – col. 15, line 10, “bypass”).

20. Referencing claim 23, as closely interpreted by the Examiner, Anerousis teaches said plurality of server computers is coupled together over a local area network said communication network, (e.g. col. 7, line 49 – col. 8, line 16 & col. 8, line 46 – col. 9, line 10).

21. Referencing claim 24, as closely interpreted by the Examiner, Anerousis teaches said information is partitioned/partially replicated throughout each of said plurality of server computers, (e.g. col. 7, line 49 – col. 8, line 16 & col. 8, line 46 – col. 9, line 10).

22. Claims 1, 9, 20, 25, 32 and 33 are rejected for similar reasons as stated above.

Claim Rejections - 35 USC § 103

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23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 2, 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anerousis (6760775) in view of Munger et al. (6502135) (hereinafter Munger).

25. As per claim 14, as closely interpreted by the Examiner, Anerousis teaches at said first BTCP module comprises the steps of:

26. a1) receiving a TCP/IP SYN packet from said client, (e.g. col. 14, line 42 – col. 15, line 18);

27. a4) receiving a TCP/IP ACK packet from said client at said first BTCP module, (e.g. col. 20, lines 41 – 57);

28. a5) receiving said HTTP request associated with said TCP/IP communication session from said client computer, (e.g. col. 8, lines 7 – 45), but does not specifically teach a2) selecting a first initial sequence number (ISN) for said first BTCP module that is associated with said TCP/IP communication session, said first ISN associated with a first TCP state of said first BTCP module;

29. a3) sending a TCP/IP SYN/ACK packet to said client;

30. a6) storing said HTTP request and connection parameters associated with said TCP/IP SYN and TCP/IP ACK packets at said front-end node.

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31. Munger teaches a2) selecting a first initial sequence number (ISN) for said first BTCP module that is associated with said TCP/IP communication session, said first ISN associated with a first TCP state of said first BTCP module, (e.g. col. 9, line 36 – col. 10, line 21);

32. a3) sending a TCP/IP SYN/ACK packet to said client, (e.g. col. 16, lines 16 – 55);

33. a6) storing said HTTP request and connection parameters associated with said TCP/IP SYN and TCP/IP ACK packets at said front-end node, (e.g. col. 16, line 56 – col. 17, line 29, “...TARP router 911 (FIG. 9) with maintain their respective transmit tables...”). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Munger with Anerousis because maintaining stored information about the communication path would be more efficient than having to spend excessive time reestablishing communications between nodes that are already in communication with each other. If this were to occur, it would take up more time and bandwidth than needed for a communication session.

34. Claims 2 and 26 are rejected for similar reasons as stated above.

35. Claims 3, 15 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anerousis (6760775) in view of Munger (6502135) in further view of Albert et al. (6775692) (hereinafter Albert).

36. As per claim 15, as closely interpreted by the Examiner, Anerousis teaches at said first BTCP module comprises the steps of:

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37. e1) sending a handoff request message second BTCP module located at said selected back-end node over said control channel, if said selected back-end node is not said front-end node, said second BTCP module located below a second TCP module in a second operating system at said selected back-end node, (e.g. col. 8, lines 17 – 61 & col. 9, line 40 – col. 10, line 18);
38. e2) including said connection parameters in said handoff request message, (e.g. col. 10, line 19 – col. 11, line 6), but does not specifically teach e3) including a first initial TCP state information for said first BTCP module, including said first ISN in said handoff request message; and
39. e4) receiving a handoff acknowledgment message from said second BTCP module if said TCP/IP communication session is successfully handed off.
40. Albert teaches e3) including a first initial TCP state information for said first BTCP module, including said first ISN in said handoff request message, (e.g. col. 25, lines 30 – 52 & col. 26, lines 15 – 65); and
41. e4) receiving a handoff acknowledgment message from said second BTCP module if said TCP/IP communication session is successfully handed off, (e.g. col. 15, lines 14 – 60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Albert with the combine system of Anerousis and Munger because transferring parameter information to from a front-end node to a back-end node that has the ability to respond to a user's request would prevent the system from requesting information from the back-end node to the user which would use up excess bandwidth and time from the system having to "re-requesting" information that is already available to the system.

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42. Claims 3 and 27 are rejected for similar reasons as stated above.

43. Claims 6, 7, 18, 19, 30, 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anerousis (6760775) in view of Albert (6775692).

44. As per claim 18, as closely interpreted by the Examiner, Anerousis teaches said first BTCP module:

45. j) receiving incoming data packets from said client, (e.g. col. 20, lines 41 – 57);

46. m) forwarding said data packets to said selected back-end server computer, (e.g. col. 20, lines 41 – 57), but does not specifically teach k) changing destination addresses said incoming data packets to a second address of said selected back-end node;

47. l) updating TCP sequence numbers and TCP checksum in said data packets to reflect said second TCP state of said selected back-end node.

48. Albert teaches k) changing destination addresses said incoming data packets to a second address of said selected back-end node, (e.g. col. 7, line 61 – col.8, line 16);

49. l) updating TCP sequence numbers and TCP checksum in said data packets to reflect said second TCP state of said selected back-end node, (e.g. col. 31, lines 31 – 65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Albert with Anerousis because changing the destination address to the selected back-end node would ensure that the information requested by the user would be transmitted to a node that can handle the request.

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50. As per claim 19, as closely interpreted by the Examiner, Anerousis teaches

51. The method as described in Claim 13, comprising

52. the further steps of:

53. j) intercepting outgoing response packets from said selected back-end node at a second bottom TCP module located below a second module in a second operating system at said selected back-end node, (e.g. col. 20, lines 41 – 57);

54. m) sending said response packets to said client, (e.g. col. 20, lines 41 – 57), but does not specifically teach k) changing source addresses of said response packets first IP address of said first front-end node;

55. l) updating sequence numbers and TCP checksum said response packets to reflect said first TCP state.

56. Albert teaches k) changing source addresses of said response packets first IP address of said first front-end node, (e.g. col. 2, lines 25 – 65 & col. 7, line 61 – col.8, line 16);

57. l) updating sequence numbers and TCP checksum said response packets to reflect said first TCP state, (e.g. col. 7, line 61 – col.8, line 16). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Albert with Anerousis because of similar reasons stated above, but it would be so the user can receive their requested data.

58. Claims 6, 7, 30 and 31 are rejected for similar reasons as stated above.

Conclusion

59. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

60. a. Barry et al. U.S. Patent No. 6615258 discloses Integrated customer interface for web based data management.

61. b. Cohen et al. U.S. Patent No. 6389462 discloses Method and apparatus for transparently directing requests for web objects to proxy caches.

62. c. Brendel et al. U.S. Patent No. 5774660 discloses World-wide-web server with delayed resource-binding for resource-based load balancing on a distributed resource multi-node network.

63. d. Sridhar et al. U.S. Patent No. 6324582 discloses Enhanced network communication.

64. e. Rai et al. U.S. Patent No. 6421714 discloses Efficient mobility management scheme for a wireless internet access system.

65. f. Shah et al. U.S. Patent No. 6446121 discloses System and method for measuring round trip times in a network using a TCP packet.

66. g. Aviani et al. U.S. Patent No. 6742044 discloses Distributed network traffic load balancing technique implemented without gateway router.

67. h. W. Richard Stevens, TCP/IP Illustrated, Volume 1 The Protocols, Addison-Wesley Professional Computing Series, pages 240 – 246.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. England whose telephone number is 703-305-5333 and 571-272-3912 as of Oct. 28. The examiner can normally be reached on Mon-Thur, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 703-308-5221. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David E. England
Examiner
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De



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